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10/089,617	04/29/2002	Takeharu Etoh	0020-4978P	1446

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EXAMINER

DANIELS, ANTHONY J

ART UNIT PAPER NUMBER

2622

DATE MAILED: 10/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/089,617

Applicant(s)

ETOH, TAKEHARU

Examiner

Anthony J. Daniels

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed (37 CFR 1.438). The following title is suggested: "IMAGE CAPTURING APPARATUS FOR ADJUSTING A RELATIVE POSITION BETWEEN AN IMAGE SENSOR AND AN OPTICAL AXIS".
3. The disclosure is objected to because of the following informalities: in paragraph [0004], Line 5, "riquired" should be required. Appropriate correction is required (37 CFR 1.435).
4. Claim 4 is objected to because of the following informalities: On line 5, "an" should be omitted. Appropriate correction is required (37 CFR 1.435).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

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international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 5 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Fossum et al. (US # 6,665,013).

As to claim 5, Fossum et al. teaches an image sensor comprising a chip (Figure 2), wherein an image capturing area of the chip comprises a plurality of blocks (Figure 2; *{The examiner interprets a block as two pixel cells, each cell labeled "10".}*) each having image information read-out lines (Figure 3; *{Each pixel cell has a charge readout line (information readout line). Two pixel cells exist for each block and thus a plurality of charge readout lines exist for a block.}*), and voltage supply wires for controlling circuitry (Figure 3, RST and ROW lines "40" and "60") in each block provided in a region along at least one of demarcation lines between the blocks (*The examiner interprets demarcation lines as column readout lines marking the boundary between horizontally arranged pixel cells.*).

As to claim 6, Fossum et al. teaches an image sensor according to claim 5, wherein the chip is cuttable along another one of the demarcation lines between the blocks (*It is inherent that a image sensor can be cut along these lines. Anything is cuttable.*).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US # 6,236,430) in view of Miyaguchi et al. (US # 5,508,740) and further in view of Kimura (US # 5,051,798).

As to claim 1, Suzuki et al. teaches an image capturing apparatus (Figure 5) comprising: an image sensor provided with a chip having an image capturing area (Figure 5, CCD "33"), said image capturing area consisting of a plurality of blocks (Figure 4; *{The examiner interprets the blocks as the pixels of the sensor.}*), each of the blocks having image an information read-out line (*It is inherent that a information readout line exist to read out the photo-electrically converted charge.*); an optical system for focusing incident light from an object to be captured on the image capturing area of the image sensor (Col. 1, Lines 63-65); and position adjustment mechanism for changing relative position between the image capturing area of the image sensor and an optical axis of the incident light directed from the optical system to the image capturing area, by 1/2 a longitudinal and lateral length of the blocks (Figure 6, Figure 7; Col. 8, Line 56 to Col. 9, Line 7). The claim differs from Suzuki et al. in that it further requires that image sensor chip is attached to a package and that more than one information readout line is provided for each block.

In the same field of endeavor, Miyaguchi et al. teaches an image sensor package to which a CCD chip is attached. The package includes a cooling device so to control the temperature of the image sensor (Col. 1, Lines 43-49). In light of the teaching of Miyaguchi et al., it would have been obvious to provide the package of Miyaguchi et al. for the image sensor of Suzuki et al., because an artisan of ordinary skill in the art would recognize that this would allow photodetection with high S/N ratio (see Miyaguchi et al., Col. 1, Lines 35-37).

In the same field of endeavor, Kimura teaches a CCD image sensor. The image sensor includes a plurality of pixels. Each pixel has two information readout lines. One line is used to readout charges for image formation. The other purges charges to an overflow drain (Figure 2). In light of the teaching of Kimura, it would have been obvious to one of ordinary skill in the art to include the purging technique in Kimura for the pixels of Suzuki et al., because an artisan of ordinary skill in the art would recognize that this would eliminate undue light from contributing to the overall image.

As to claim 2, Suzuki et al., as modified by Miyaguchi et al. and Kimura, teaches an image capturing apparatus according to claim 1, wherein the position adjustment mechanism is capable of displacing the image sensor with respect to the optical axis (see Suzuki et al., Figure 4).

7. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagawa (US # 6,803,949) in view of Miyaguchi et al. (US # 5,508,740) and further in view of Kimura (US # 5,051,798).

As to claim 1, Kitagawa teaches an image capturing apparatus (Figure 2A) comprising: an image sensor provided with a chip having an image capturing area (Figure 2A, color image sensor “6”), said image capturing area consisting of a plurality of blocks (Figure 15A, *{The examiner interprets a block as a pixel.}*), each of the blocks having an image information readout line (*It is inherent that a information readout line exist to read out the photo-electrically converted charge.*); an optical system for focusing incident light from an object to be captured on the image capturing area of the image sensor (Figure 2A, optical lens “101” and plane parallel

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plate “4”); and position adjustment mechanism for changing relative position between the image capturing area of the image sensor and an optical axis of the incident light directed from the optical system to the image capturing area, by 1/2 a longitudinal and lateral length of the blocks (Figure 4, Figure 7C, Figure 14; Col. 1, Lines 34-40). The claim differs from Kitagawa in that it further requires that image sensor chip is attached to a package and that more than one information readout line is provided for each block.

In the same field of endeavor, Miyaguchi et al. teaches an image sensor package to which a CCD chip is attached. The package includes a cooling device so to control the temperature of the image sensor (Col. 1, Lines 43-49). In light of the teaching of Miyaguchi et al., it would have been obvious to provide the package of Miyaguchi et al. for the color image sensor of Kitagawa, because an artisan of ordinary skill in the art would recognize that this would allow photodetection with high S/N ratio (see Miyaguchi et al., Col. 1, Lines 35-37).

In the same field of endeavor, Kimura teaches a CCD image sensor. The image sensor includes a plurality of pixels. Each pixel has two information readout lines. One line is used to readout charges for image formation. The other purges charges to an overflow drain (Figure 2). In light of the teaching of Kimura, it would have been obvious to one of ordinary skill in the art to include the purging technique in Kimura for the pixels of Kitagawa, because an artisan of ordinary skill in the art would recognize that this would eliminate undue light from contributing to the overall image.

As to claim 3, Kitagawa, as modified by Miyaguchi et al. and Kimura, teaches an image capturing apparatus according to claim 1, wherein the position adjustment mechanism is capable

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of displacing the optical system with respect to the image sensor (see Kitagawa, Col. 1, Lines 34-40).

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (US # 5,436,661) in view of Miyaguchi et al. (US # 5,508,740) and further in view of Kimura (US # 5,051,798).

As to claim 4, Yamamoto et al. teaches an image capturing apparatus (Figure 5) comprising: an image sensor provided with a chip having an image capturing area (Figure 5, CCD “23G-2”), said image capturing area consisting of a plurality of blocks (*The examiner interprets a block as a pixel of the image sensor.*), each of the block having an image information read-out line (*It is inherent that a information readout line exist to read out the photo-electrically converted charge.*); an optical system for focusing incident light from an object to be captured on the image capturing area of the image sensor (Figure 5, lens “20”); an image sensor mount section to which the sensor is replaceably attached (*It is inherent that an image sensor is replaceably attached. An image sensor can be ripped off and glued back on.*), wherein a plurality of CCDs are provided (Figure 5), one of the which is provided so that a center of whole of the blocks constituting the image capturing area coincides with an optical axis of the incident light (Figure 5, CCD “23G-1”; *{Incoming light strikes the entire sensor, including the center of whole of all the blocks (pixels). Thus an optical axis would be incident at this point.}*), and another so that a center of at least one of the blocks constituting the image capturing area coincides with an optical axis of the incident light (Figure 5, CCD “23G-2”; Col. 7, Lines 48-52; *{An optical axis is incident with the center of all of the blocks (pixels). Otherwise, the pixels would not receive*

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light, thus not produce charge corresponding to the amount of light.}). The claim differs from Yamamoto et al. in that it further requires that image sensor chip is attached to a package and that more than one information readout line is provided for each block.

In the same field of endeavor, Miyaguchi et al. teaches an image sensor package to which a CCD chip is attached. The package includes a cooling device so to control the temperature of the image sensor (Col. 1, Lines 43-49). In light of the teaching of Miyaguchi et al., it would have been obvious to provide the package of Miyaguchi et al. for the color image sensors of Yamamoto et al., because an artisan of ordinary skill in the art would recognize that this would allow photodetection with high S/N ratio (see Miyaguchi et al., Col. 1, Lines 35-37).

In the same field of endeavor, Kimura teaches a CCD image sensor. The image sensor includes a plurality of pixels. Each pixel has two information readout lines. One line is used to readout charges for image formation. The other purges charges to an overflow drain (Figure 2). In light of the teaching of Kimura, it would have been obvious to one of ordinary skill in the art to include the purging technique in Kimura for the pixels of the CCDs of Yamamoto et al., because an artisan of ordinary skill in the art would recognize that this would eliminate undue light from contributing to the overall image.

Remarks about the rejection of claim 4: *In the claim, the distinction between the packages is the position of the image sensor in the package. Accordingly, Two identical packages could be considered two different if the chips in each are positioned in a certain locations relative to the optical axis. This is the basis of the rejection above. There exists a half a pixel pitch between the two green color sensing CCDs. Thus providing the same package (the package of*

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Miyaguchi et al.) on the two differently spaced CCDs of Yamamoto et al. defines two different packages.


Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Daniels whose telephone number is (571) 272-7362. The examiner can normally be reached on 8:00 A.M. - 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AD
9/16/2006


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SUPERVISORY PATENT EXAMINER